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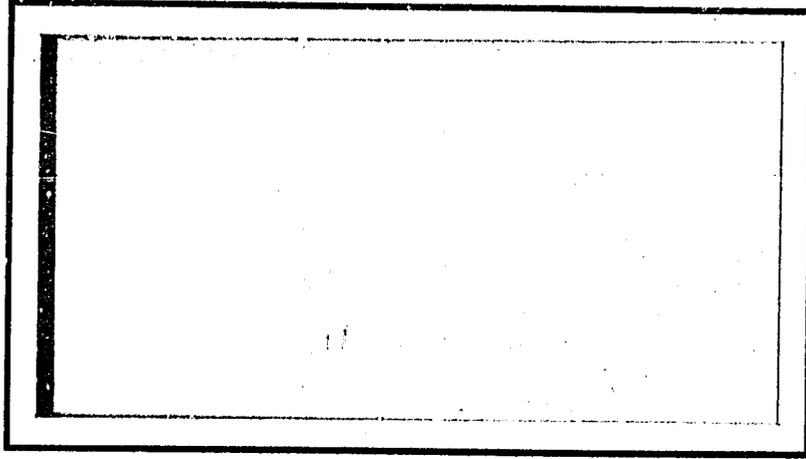
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**ORAL FLUID TREATMENT  
FOR DIARRHEA  
MENOUFIA GOVERNORATE, EGYPT**

**A Report Prepared By:  
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**During the Period:  
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## EXECUTIVE SUMMARY

### A. SCOPE OF WORK

This is a report of a consultancy to AID to assist the Family Planning Operations Research Project in Egypt's Menoufia Governorate in:

- 1) Developing practical aspects of an oral rehydration delivery system; and
- 2) Developing training plans for household canvassers and clinic staff.

Dates of the consultancy were January 15-February 9, 1979.

### B. FINDINGS - RECOMMENDATIONS

At least 25% and perhaps as much as 50% of all deaths among Egyptian children less than 5 years old are due to diarrhea. (Estimates vary according to the source.) Childhood death rates are high, so that absolute numbers of these diarrhea deaths are very large--probably about 100,000 per year in a total population of 40,000,000. Oral fluid treatment programs in very similar villages of north India have lowered death rates from this cause by 50%. It is likely that a nationwide program in Egypt could have an even greater effect since:

- 1) Public and government awareness and concern about diarrhea as a cause of death is very high;
- 2) Nutrition in Egypt is much better than in India; and
- 3) The Egyptian Health Service can provide strong backing for a home treatment program, with a health unit for every 10,000 population and a functioning hospital intravenous rehydration center for every 200,000.

The government of the Menoufia Governorate (population 1,700,000) has approved a program for mass education of mothers, the general public and government health personnel in the use of Oralyte (UNICEF oral rehydration salt packets) as a home treatment for dehydration due to diarrhea. The program will begin with a distribution of both Oralyte and oral contraceptives to all eligible households in Menoufia. The distribution will be used as a central event around which an intensive education campaign will be organized aimed both at encouraging use of the products distributed and maximizing utilization of existing government facilities for health and social welfare of mothers and children. The project will be administered jointly by the Health and Social Welfare Ministries in Menoufia and the Social Research Center of the American

University in Cairo (SRC). It will last three years, extending services to 1/3 of the population in each year.

This report is the outcome of a joint effort with SRC staff to develop administrative procedures for the diarrhea program, to create educational materials and to determine whether an evaluation of mortality effect will be possible.

We have concluded that the likelihood of a successful program is very high and that it will be possible to demonstrate any reduction in death rates through use of official records of vital events, combined with annual surveys of sample populations with and without services. The surveys will be conducted by SRC which will also analyze the results. A preliminary report of the experience in the 1979 diarrhea season should be available early in 1980.

## I. SCOPE OF WORK

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## II. BACKGROUND

### A. CHILDHOOD DIARRHEA IN EGYPT

Without question, diarrhea among pre-school children is as great a problem in Egypt as in any country in the world. Official records show infant death rates around 115 per 1,000 live births, with 50% of the deaths due to diarrhea (Table - I).

TABLE - I

INFANT MORTALITY DUE TO DIARRHEA IN EGYPT<sup>(1)</sup>

	<u>1965</u>	<u>1970</u>	<u>1972</u>
Total deaths during first year	138,120	135,067	137,688
Deaths from diarrhea during first year	73,167	66,066	63,090
Infant mortality rate	113	116	116 <sup>+</sup>
Infant mortality rate due to diarrhea	59.9	56.9	53.1 <sup>+</sup>

Records in Menoufia Governorate for 1978 show a smaller proportion of diarrhea deaths among infants, but a large proportion in children 1-4 years old (Table - II).

+ per 1,000 live births

TABLE - II  
UNDER FIVE DEATHS IN MENOUFIA, 1978<sup>(2)</sup>

	<u>Total Number of Deaths</u>	<u>Death Rate</u>
Deaths below one year	7,045	101 +
Diarrhea deaths below one year	1,064	15 +
Deaths age 1-4 years	3,893	20 ++
Diarrhea deaths ages 1-4 years	1,700	9 ++

Among all children under 5, there were 10.8 deaths from diarrhea per 1,000 in 1978. For comparison, there were 14 deaths per 1,000 children age 1 month - 4 years in Punjab in 1971, before a treatment program was instituted<sup>(3)</sup>.

There is reason to believe that the Menoufia records underestimate both total deaths and diarrhea deaths. A study of validity of the official registration system was carried out in Menoufia in 1972<sup>(4)</sup>, showing that 20% of deaths over one year and 40% of infant deaths were not recorded (see pages 19-20). Kielmann has pointed out that most of the infant deaths not recorded are neonatal deaths - the ratio of post-neonatal to neonatal deaths is much greater than the 1:1 which would be expected. In Menoufia there were 6 post-neonatal deaths recorded for every neonatal death in 1978.

The 1972 study in Menoufia showed an infant mortality rate of 147 and a 1-4 year mortality rate of 34. 1-4 mortality has probably dropped since then (because of improved nutrition), but it is not likely to be less than 25. Infant mortality is probably about the same as in 1972.

The recorded cause of death is based on the history given by the person reporting the death. It is likely that the actual number of diarrhea deaths is higher than that officially recorded since:

- 1) Diarrhea death rates reported from other parts of Egypt are uniformly much higher than those recorded in Menoufia, but the economic and sanitary situation there is not appreciably different from the rest of the delta region.
- 2) Public awareness of diarrhea and dehydration as a cause of child deaths in the summer season seems higher than it was in Punjab.

+ per 1,000 live births  
++ per 1,000 population

- 3) 833 children were admitted to the diarrhea rehydration center at the main hospital in Shebin-el-Kom in 6 months of 1978 (a much larger number are treated as out-patients). A smaller district hospital serving 150,000 people admits an average of 30 such patients per month. Projecting these figures to the nine hospitals in Menoufia Governorate (population 1,710,000), there are probably about 5,000 patients per year admitted for intravenous rehydration, yet it is believed that only a fraction of the population has access to the hospital system. (This belief is based on the small numbers of referrals from village health units to hospitals and it is possible that large numbers of patients are bypassing the village units in which case the hospital rehydration program could be having a real impact on death rates. In any event, there is no question that diarrhea is a serious problem and an efficient home oral rehydration program should have a substantial impact on both death rates and the need for hospitalization).

In one study of stool cultures from hospitalized children with diarrhea, a bacterial pathogen was found in 57%. (Table-III).

TABLE - III  
BACTERIAL PATHOGENS IN HOSPITALIZED CHILDREN WITH  
DIARRHEA(1)

	<u>Positive Isolates</u>	<u>Percent</u>
E. Coli (agglutinable) (enterotoxigenic)	57	29
Shigella	19	10
Proteus	19	10
Klebsiella	10	5
Citrobacter	4	2
Pyocyaneus	2	1
Salmonella Typhi	2	1
Salmonella Typhimurium	1	1

There have been no similar studies of hospitalized or non-hospitalized children without symptoms.

There is tremendous seasonal variation in the incidence and severity of diarrhea. More than 75% of deaths occur in the summer months. Flies are probably important in the transmission of the disease. The only sanitary measure which has been shown to have an effect on child deaths in Egypt was the fly control program introduced by John Weir in 1949<sup>(5)</sup>. Unfortunately, insecticides

were felt to be the only practical means of fly control and the flies rapidly became resistant. The whole question of sanitation in Egyptian villages needs a critical re-evaluation. The population using a single water source is very large, drainage and sanitary garbage disposal are almost non-existent and there is no program for home latrine construction. Over the long term, the cost-effectiveness of the measures designed to improve these conditions could be high.

Malnutrition is not as important a factor in diarrhea mortality as in other parts of the world, but there is more malnutrition in Egyptian villages than is generally believed. Figure 1 presents graphically the results of the nutrition survey conducted by the Center for Disease Control in 1978. At the most critical age, 12 to 23 months, 17% of children were below 75% of the CDC standard for weight for age. This is a considerable improvement over the situation in 1966, when another survey showed 22% below 70% (of the Harvard standard), but nevertheless there is a large proportion of weaning age children at nutritional risk and nutritional measures will be important in the control of mortality from diarrhea. (Appendix K outlines the reasons why I believe weight for age is a better index than weight for height in weaning age children).

As mentioned, public consciousness of "summer diarrhea" as a cause of death in the first two years of life is high. Almost all mothers interviewed were also aware that children lose fluid and need to drink more to replace it, but they do not have any idea how much fluid is needed and mixtures of sugar and salt are not used. Most mothers said they would stop breast feeding during diarrhea, but it seems that this is because doctors have told them to do so and not because of any traditional practices. Food other than breast milk is invariably stopped and small quantities of tea (with sugar) made from cardamon or other spices is given.

In January and February there is very little diarrhea in Egypt and no cases were seen in any of the hospitals, clinics or village homes visited. Judging from descriptions by mothers and medical personnel, serious cases usually have acute watery diarrhea with rapid progression to dehydration and death. Dysentery is less common and less serious. Vomiting is often mentioned as a problem so that it will be important to look into the effect of vomiting on use of oral fluid treatment during the next diarrhea season. Referral for IV treatment is possible in Egypt and rehydration centers have been established in district hospitals, each serving a population of about 200,000.

## B. GOVERNMENT HEALTH SERVICES FOR DIARRHEA

The MCH Division of the Egyptian Health Ministry and the Egyptian Pediatric Association realize the importance of diarrhea as a cause of death. A campaign to reduce deaths from this cause has been underway for several years. A test of Oralyte use in clinics was conducted in 1977 in Alexandria and in Cairo with encouraging results -- death rates and hospital admission rates both fell(6). The Pediatric Association has distributed separate booklets for doctors, nurses and the public, designed to teach them the principles of oral and I.V. therapy. A powder with the same composition as Oralyte is manufactured in Egypt in packets 1/5 the size of the usual packet (the trade name is Rehydran) - the reason for this small size is that glasses and bottles with a capacity of 180-200 cc are widely available in villages, whereas containers known to contain one liter are rare.

As mentioned, I.V. rehydration centers have been established in all district and government hospitals. There have been 9 such centers in Menoufia since mid-1978. Two were visited and both were well equipped and well stocked with I.V. fluids. Hospital physicians understood the principles of oral and I.V. fluid administration very well and give good nutritional advice (they do not believe that breast feeding should be stopped and the Pediatric Association now recommends stopping breast feeding for only 12 hours). The death rate in the center at Shebin-el-Kom was low - 2.5% of 565 patients, seen after the first month the rehydration center operated.

The rural health system in Egypt is very well developed and should make it possible to extend the program to every village in the country. Unfortunately, the diarrhea program is not working very well at the peripheral level. Five village health units were visited. Oralyte or Rehydran packets were available in every center, but in relatively small quantities and only one of the five doctors had a clear idea of how to mix the fluid or how much was needed. The one doctor who did have this knowledge recommended Rehydran only in cases with clinical signs of dehydration.

With the exception of one unit which was quite close to a large hospital, there were very few referrals to hospitals for rehydration, even though death records showed large numbers of deaths from summer diarrhea.

There has been no attempt to educate village residents on the use of simple mixtures of table salt and table sugar. This is unfortunate since there is no prospect that there will be adequate supplies of Oralyte packets for several years -- probably five or more. The government has had preliminary discussions with UNICEF about a plant to produce packets in Egypt, but when this is

in production it will produce only 5,000,000 packets per year. 24,000,000 packets per year will be needed if four packets are to be provided for each child under five. Four episodes of diarrhea per child per year is a low estimate of incidence.

(Cost incidentally, is not too much of a burden since the Egyptian Government is already spending more than \$2.00 per capita per year on rural health services. At a manufacturing cost of \$0.10 per packet, 4 packets per year for every child under five will cost less than \$0.10 per capita of population).

In this situation it would be more practical to test a salt-sugar mixture prepared with materials available at home, but the MCH division in the health ministry is reluctant to do this on a large scale and UNICEF has already made a commitment to provide adequate supplies of Oralyte for Menoufia Governorate. (Production and distribution facilities for Rehydran were not felt to be adequate to meet the need). Since there has been no demonstration of an effective home diarrhea treatment program in Egypt and it is possible to move immediately to establish a program with Oralyte, the decision has been made to do this, to try to document a mortality effect during the next diarrhea season and to leave it to the Egyptian authorities to decide whether this justifies a national program, and if so, how best to implement it. In the meanwhile, Dr. Nagaty and Dr. Kielmann at the Program to Strengthen Health Services, hope to test a program using home supplies of salt and sugar in a smaller population of 100,000 - 200,000.

In the opinion of this Consultant, a simultaneous and independent test of oral fluid prepared from home supplies is very important. Without this test there will be no basis for a choice between Oralyte and home supplies in a national program.

### C. THE CONTRACEPTIVE DISTRIBUTION PROGRAM IN MENOUFIA

A detailed description of the contraceptive distribution in Menoufia can be obtained from Duff Gillespie, DS/POP/R, AID Washington or Saad Gadalla, American University in Cairo. Briefly, a contraceptive distribution program has been tested in parts of two counties in Menoufia (population 200,000). Literate women were recruited from villages and trained to be canvassers. A single canvass was conducted during which contraceptives were given to married, non-pregnant women who did not have children less than 3 months old. At the same time there was an intensive program to involve community leaders and organizations at all levels. There was also an intensive program to teach village clinic (health unit) personnel about contraceptive practice and to

make them aware of the program so that the clinics could serve as effective places for re-supply and referral. The objective was to make the canvass and distribution a central event around which a community-wide education program was organized. A re-survey 3 months later showed that contraceptive prevalence had risen from 19.1% to 27.7% and that clinics were operating effectively as sources of re-supply. Prior to the canvass, clinics had provided 50% of contraceptives and the rest came from private sources. Subsequently, 85% of the supplies came from the clinics.

After review of these results it has been decided to expand the program to the entire rural population of 1,400,000 in Menoufia and to add a health component to the canvass as well as to the education programs for the community and for the village health unit personnel. Three counties with a population of 600,000 will be covered in the first year, three more the second and the last two in the third. The health components will be home treatment of diarrhea with Oralyte and a campaign to encourage pregnant women to make use of the tetanus immunization which is available in health units (to prevent neonatal tetanus).

### III. FINDINGS

Most of the time was spent (1) developing and testing teaching procedures and written materials to be used in the canvass and the associated education programs and, (2) developing procedures for evaluation of program effect on mortality.

At the community level informal and formal surveys were conducted in the village of Shanawan in Shebin-el-Kom to determine present practices for management of childhood diarrhea. On the basis of preliminary interviews it was felt that mothers could be taught to use a teaspoon of Oralyte and a 200 cc glass commonly available at home, to make up 200 cc at a time of the solution from the Oralyte packets designed to make one liter. (Oralyte packets will be used because of the supply constraints. Larger glasses or other containers of known or consistent volume are not available). A group of local women (previous canvassers for contraceptive distribution) was trained in this procedure, and they in turn, trained 70 other women to make up the mixture. They also tested other instruction material (an early version of Appendix B). Forty-three of these women were selected for a test of how much they had learned and this was done 3 days later using a modified version of Appendix J. Samples of fluid prepared were tested for sodium, potassium and glucose at the U.S. Naval Medical Research Unit in Cairo. 75% of the women produced acceptable solutions (Figure 2) but 25% of the solutions prepared had dangerously high sodium concentrations, some of them as high as 200-300 mg of sodium.

per liter. There is a smaller tea glass (120 - 140 cc) which is also commonly available and which was used in several cases. Furthermore, the use of a small volume container magnified any variation in the amount of powder on the spoon.

It was felt that this procedure would not be satisfactory and the decision was made to distribute a 1 liter plastic bottle (cost about \$0.15) together with the packets in order to simplify the preparation process. Instructions will be printed on the bottle, each family will also receive more detailed instructions on a printed card and a set of questions and answers were made to be used for trainees, canvassers and public groups. All of these materials were prepared in English and Arabic and revised after testing and discussion, working jointly with the Staff of the Social Research Center. Copies are attached and proposals for how they could be used are outlined in the "Program" section below.

Instructions about feeding, when to start OralYTE, how much to give, etc., were generally recalled correctly by the mothers.

Five village health units and 2 hospitals in Menoufia were visited to discuss diarrhea with Staff, look at facilities and supplies and review the records of births and deaths which are kept in these units.

The health offices at the Governorate headquarters in Shebin-el-Kom were visited and discussions were held with the deputy director of health services, who was well informed about the contraceptive distribution project and supported it and the addition of oral fluid treatment strongly. Control of health services is decentralized in Egypt and Governorate officers have the authority to introduce new programs, with approval of the Governor. Dr. Abdel Rizkallah has been assigned to work with the project and will be able to spend most of his time on it. He is an intelligent man who has worked for 9 years with the rural health program in Menoufia.

The pediatrician in charge of the diarrhea rehydration program in Menoufia is Dr. F. A. el Akabawy. He is a hospital-based pediatrician who understands oral and I.V. treatment of diarrhea completely. He is anxious to see a home treatment program and could be a very valuable person for training personnel from village health units. Training materials were reviewed with him and final drafts should be reviewed again.

Dr. Lutful-al-Sayeed, the Director of MCH at the Health Ministry in Cairo is enthusiastically in favor of a home-based OralYTE treatment program. He is less enthusiastic about a salt-sugar treatment program, but is willing to see one tested. He

would like to participate in a training program for medical personnel in Menoufia and because of his experience with the Oralyte trial in Cairo he will be able to make an important contribution.

Dr. Nagaty and Dr. Kielmann at the Project for Strengthening Rural Health Services have given high priority to improvement of diarrhea treatment. As mentioned earlier, they would like to test preparations using home supplies of salt and sugar. Their own analysis of the records of births and deaths in several rural health centers was very useful for the development of procedures to evaluate the effect of the program on mortality. It is hoped that they will be able to use the same procedures in their own tests.

At AID discussions were held with Michael Jordan, Bud Schutt, Rose Britannic, Donald S. Brown, Duff Gillespie and others. There was general interest in the potential for this sort of health education campaign to strengthen delivery of health and family planning services. Concern was expressed by some individuals that the diarrhea treatment program might dominate the family planning efforts, leading to a reduction in the effect on contraceptive use. There is commitment to go ahead with the diarrhea program, but it will be important to consider this question in the evaluation, particularly so, since my personal belief is that contraceptive use will be increased.

#### IV. RECOMMENDATIONS

##### A. THE DIARRHEA TREATMENT PROGRAM

UNICEF Oral Rehydration Salts (Oralyte) will be distributed to every household which has a child under five years of age. Households with older children who request packets will be told they are available in the clinic for patients with diarrhea. Distribution will be by canvassers especially recruited and trained for this purpose. They will be instructed to:

- 1) Give to each family:
  - 3 packets of Oralyte
  - 1 special one liter bottle for mixing the oralyte with the correct amount of water
  - 1 card with printed instructions for the use of Oralyte and the management of diarrhea.
- 2) Teach the family how to manage diarrhea in children. The basis for this instruction will be directions printed on the bottle, the more detailed instructions on the card and a set of questions and answers prepared in advance (English and Arabic translations of these are attached as Appendix A, B and C)

- 3) Inform each family that replacements for used packets can be obtained by visiting the nearest health unit MCH clinic. Villages too far from health units will be resupplied by individual village residents appointed to do this job.

The same instruction cards and question-answer sheets will be the basis for an extensive public education program to ensure that the following groups understand how to use Oralyte in the treatment of diarrhea, where it can be obtained, and the principles of nutritional support during and after diarrhea:

- Village level committees coordinating the Menoufia program (there are 20 of these in the first 3 target counties);
- Social service workers;
- Women's clubs;
- School teachers and school children;
- Religious leaders;
- Government health personnel at all levels (particularly those in village health units, but not excluding those in hospitals and central administrative posts); and
- Private physicians and other practitioners.

The SRC\* coordinators for each county can work with the village committees to identify individuals from each of these groups who will be given instruction and written material and asked to give training to others. Special attention should be given to the training of government health personnel, private medical practitioners (if this is possible) and school teachers. Training programs are described in more detail below.

A utilization survey of 200 families is planned early in the diarrhea season. Information from this survey plus clinic and hospital reports will be the basis for a decision in June about the necessity for a repeat canvass and distribution during the season. It is not expected that this will be necessary.

Follow up and supervision of the home treatment program will be the responsibility of the health ministry in Menoufia. Dr. Abdel Rizkallah seems the logical person to manage this supervision since his family planning responsibilities require him to cover the same rural health units which will be the base for resupply and referral and he is already working with SRC. It will be necessary to:

\*SRC: Social Research Center of American University in Cairo

- 1) Be sure all health units are supplied with Oralyte and trained in its use before the diarrhea season begins;
- 2) Make a monthly evaluation of reports from clinics and hospitals to detect problems in utilization or resupply, and take action to correct these problems (Suggested Clinic and Hospital Report Forms and Consolidated Records are attached as Appendix D, E, F and G.);
- 3) Make periodic personal visits to clinics in health units and hospitals to check on levels of training and clinic practices (If each unit and hospital is to be visited once in 3 months, this means 5 visits per week.);
- 4) Consult with Dr. Gadalla and SRC in June to see if a repeat canvass is necessary; and
- 5) Maintain close contact with the pediatricians in charge of the hospital rehydration program.

(Dr. Rizkallah will also be responsible for the death survey which is needed for the evaluation of mortality effect. This will require village visits in the three counties receiving service and in three other counties. It is not likely that he can do all of this by himself. One or two additional professional persons are needed. Guaranteed transport will be essential.)

Follow up and supervision of the public education campaign will be the responsibility of the SRC coordinator for each county, working with the social affairs director for each county. Meetings with each of the groups which has received training (school teachers, etc.) should be arranged during the diarrhea season to get their reaction to the program. All of these groups should be encouraged to look for problems and report them. Most reports will probably deal with problems in health units and these should be communicated promptly to the government medical officer who is coordinating the program.

The utilization surveys will be an important guide. One week should be enough time to do a survey and analyze the result. SRC county coordinators will be responsible for producing these reports which are discussed below in detail.

## B. TRAINING

The ultimate objective of all training is the mother. The aim of the program is to make every mother an expert in the treatment of childhood diarrhea. If she is to do this job well, she must have confidence in what she is doing. The best way to build this confidence will be for her to give the treatment successfully

herself, but another important reinforcement will come through hearing from multiple different sources that the treatment she is giving is correct and accepted. The main objective of the training for medical personnel, school teachers, social welfare staff and other groups will be to give them the same ability as the canvassers, to explain the treatment outlined on the bottle label and the instruction card and to answer the questions on the question and answer sheet. Medical personnel, particularly, will also have to learn to recognize and refer promptly those cases which don't respond to oral treatment: children with persistent vomiting or with weakness so severe that they cannot take oral fluids.

#### SPECIFIC TRAINING WILL BE NEEDED:

- 1) For canvassers: Go through the information on the bottle label and the instruction card step by step, then do the same for the question and answer sheet. Ask for questions from the canvassers and answer them, then the trainers should ask questions, including these:
  - Why do we give a bottle with powder? (because it should not be made up too strong or too weak)
  - Why do we start fluid immediately when diarrhea starts? (because it is easier to prevent dehydration than to treat it)
  - How much fluid should we give an eleven month old baby with diarrhea? 8 times a day? (about 3 fingers less than a full bottle)
  - If the baby vomits, is it all right to give more? (yes - babies won't take too much if you give it slowly)
  - Why do we start with one teaspoon at a time? (too much, too fast can cause vomiting)
  - How important is the advice about diet? (just as important as the fluid itself)
  - What are the most important signs that a baby must go to the hospital? (1. when the baby is too weak to take fluid by mouth; 2. when vomiting persists even though fluid is given in small amounts)

Ask these questions and others orally at the end of the session.

- 2) For social welfare workers, school teachers, religious leaders, etc.: give exactly the same kind of training (politely). We want them to train mothers and older

children just like the canvassers. The question and answer sheet is designed for them as much as for the canvassers. It should take about one hour to go over the material, answer and ask questions (this was tested on a group of canvassers in Shanawan).

- 3) For doctors: fortunately, the Egyptian Pediatric Association and the MCH division in the Health Ministry have already approved the use of oral fluid in the way we have recommended. There are only two points of possible minor disagreement:

- We recommend continuing breast feeding. The pediatricians I met in Menoufia agreed that it was acceptable and less confusing to simply say "continue breast feeding" instead of "stop for 12 hours only."

- Boiled and cooled water is usually recommended. We have simply said "clean water from tap or pump." The reason for this is that boiled water can become an obstacle to prompt and early treatment. Fuel is expensive and it takes time to organize a fire. Also it complicates what should be a simple procedure. Most important, though, is the time it takes for a quart of boiled water to cool on a hot day--at least two hours, if the temperature is above 40 C.

Trainers for the physicians in health units and hospital clinics must be identified and introduced to the materials prepared for mothers and canvassers. I have already discussed them with Dr. F.A. el Akabawy (Chief Pediatrician at the main Menoufia Hospital in Shebin-el-Kom). He is in charge of the rehydration program in Menoufia and would be an excellent choice to organize physician training. A reasonable procedure would be the following:

- a) An introductory session with Dr. Sayaad (Director, MCH in Cairo), a prominent professor of pediatrics (selected by Dr. Sayaad), Dr. el Akabawy and Dr. Gadalla. Dr. Sayaad could discuss his work with Oralyte and the government program for rehydration. The pediatrician could discuss the principles of management of dehydration, Dr. el Akabawy could distribute the materials for mothers (Appendix A, B and C) and explain them briefly and Dr. Gadalla could explain the distribution program in all its aspects. All health unit physicians, all physicians seeing children in hospital clinics and all senior public health nursing staff should attend.

b) A second session for health unit doctors and selected hospital doctors in charge of clinics in the three counties. This could be run by Dr. el Akabawy, with his staff and Dr. Rizkallah. There should be a detailed discussion of the materials to be distributed and the question and answer sheet, with opportunity for the doctors to ask questions. At the end, the doctors should know:

- How to prepare Oralyte;
- The difference between Oralyte and Rehydran;
- When to start Oralyte;
- How much to give;
- How to minimize the risk of vomiting (by small frequent feedings);
- How to tell when a child should be referred to a rehydration center;
- How important the nutrition information is;
- How to use the new reporting forms and registers (Appendix D, E and F);
- How the resupply system works.

They must understand that if the program is going well there will be 40 or 50 children taking Oralyte every day in the diarrhea season in a village of 10,000. For best results, mothers must start the treatment at home as soon as diarrhea starts. To be able to do this the mothers must:

- know how to do it, and
- have material available at home.

Health unit doctors must see to it that Oralyte is freely available in the MCH unit to any mother who asks for it. Tell them they will get a resupply as long as they keep a record of who received it.

They must also train all the personnel in the health post and instruct them to check every mother who comes to the clinic to be sure she understands how to use Oralyte.

In view of the present lack of information about oral fluid treatment among health unit doctors, a written examination should be given at the end of the second session to be sure that this problem has been corrected.

Follow up visits to each rural health unit by the government health persons in charge of the program will be essential. In addition to checking records and stocks they should call the MCH staff and the doctor together for a short meeting to discuss the program and check their knowledge, by asking the same questions the canvassers were asked at the end of their training session (page 15) The pediatrician from Menoufia who organizes the training program for doctors should become pediatric consultant to the project. He should meet regularly with those in charge of the field program to review progress.

- 4) For MCH staff in health units and hospital clinics: They will have a special role in resupply and reinforcement training for mothers, and they should have a special training program. Teach them the same things as the canvassers, in the same way, but give special emphasis to recognizing serious cases which must be referred. This training could be given in one session (one morning) for each county, and could be organized by the Menoufia Pediatrician or an outside Doctor or both, with MCH supervisors for each county included, of course.
- 5) Special training will have to be given to those who will conduct interviews in the intensive study villages to determine the cause of death. This should be given by the physicians in charge in Menoufia and will consist of:
  - A review of the death investigation form (Appendix H)
  - A review of the list of causes of death
  - Two or three family interviews conducted jointly by the physician in charge and the local investigator.

Follow up of the training can take place at the final conference to establish the diagnosis. The physicians in charge should participate in all of these conferences:

### C. EVALUATION

There will be:

- 1) A monthly report of Oralyte consumption, clinic attendance, hospital referrals and hospital deaths. This is intended to be a guide to local variations in program effectiveness.
- 2) Three surveys of utilization in 200 families selected from six villages outside the intensive study area. Appendix J is the instrument for these surveys, which are meant to be conducted and processed rapidly to provide a basis for modification of the program. The results will also be useful for the final evaluation.
- 3) An intensive survey of nine villages (50,000 population) in the three counties to receive the program in 1979, and nine similar villages in three counties which will receive services in 1980. Experimental and control populations should contain 5,400 households with children under 5.\* The survey will cover a broad range of socioeconomic, demographic and health questions, but will include:
  - A question to identify any child under 5 who dies in the preceding year.
  - A question about episodes of diarrhea or dysentery in children under 5 in the preceding 2 weeks, combined with a question about whether Oralyte was used in these episodes.
  - A question to determine whether Oralyte and the bottle for it are present in the household.

Surveys will be conducted just before the canvass and at one and two years afterward.

- 4) A survey of all deaths between age 1 month and 5 years in the population covered by the intensive surveys. Deaths will be identified by the official registration system and the surveys described in (3) above. Interviews to establish the cause of death will be conducted by the doctor and nurse assigned to the village's health unit. They will be given special training and will use the interview form and list of causes in appendices H and I. Comparison of deaths with diarrhea as either primary or underlying cause will be made, but it will also be possible to consider death due to acute diarrhea separately.

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\* Based on surveys conducted at the time of the first contraceptive distribution program.

Survey and registration reports will be combined to calculate overall death rates for May 1, 1978 to May 1, 1979, and all child deaths recorded after May 1, 1979 will have a family interview. In other words, cause specific death rates will be available after May 1, 1979. The corrected and adjusted census of November 1976, will be used as a denominator for rates.

About 350 deaths per year in this age group would be expected in a population of 50,000. In Menoufia, 27% of these are now officially reported to be due to gastroenteritis giving a gastroenteritis death rate of 11/1,000 children. This is undoubtedly a low estimate, since the death rate from diarrhea was 14/1,000 in Punjab in 1971 and diarrhea seems clearly to be more of a problem here. Taking the official rate, however, 83 child deaths from diarrhea per year would be expected in a population of 50,000. If this number is reduced by one third over that in the control population, the difference will be significant at .028.

Completeness of the official registration system has been studied in Menoufia by N. Fergany\*, who collected births and deaths from two villages with a population of 15,500. Three sources were used: the official registration, an independent prospective monthly reporting system and two surveys conducted one year apart. Results are shown in Table IV, page 21.

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\*N. Fergany, Op. Cit.

TABLE - IV

COMPARISON OF BIRTHS AND DEATHS REPORTED

THROUGH

OFFICIAL REGISTRATION AND FROM OTHER SOURCES

	<u>Births</u>			<u>Deaths</u>		<u>Infant Deaths</u>	
	<u>Kafir</u>		<u>Shanawan</u>	<u>Kafir</u>		<u>Shanawan</u>	<u>Kafir</u>
	<u>Shanawan</u>	<u>Shanawan</u>		<u>Shanawan</u>	<u>Shanawan</u>		<u>Shanawan</u>
From Official Registration	456 (85%)	108 (74%)	189 (74%)	45 (78%)	44 (55%)	11 (58%)	
From Two Surveys	433 (81%)	116 (80%)	179 (70%)	24 (59%)	60 (75%)	13 (68%)	
From Registration and Surveys	518 (96%)	138 (95%)	231 (90%)	54 (93%)	66 (83%)	16 (84%)	
From All Sources	537	145	256	58	80	19	

	<u>Deaths Over One Year</u>	
	<u>Shanawan</u>	<u>Kafir Shanawan</u>
From Official Registration	145 (82%)	34 (87%)
From Two Surveys	119 (68%)	21 (54%)
From Registration and Surveys	165 (94%)	38 (97%)
From All Sources	176	39

Thus the major registration problem is with infant deaths. About 80% of deaths over one year are registered, and if annual surveys are used as additional sources, 95% are detected. Kielmann has shown that most of the unreported infant deaths are neonatal. My own survey of four villages (population 31,800) in Menoufia confirms this - the ratio of neonatal to post-neonatal deaths was 1:5.3. Based on the rates observed in Fergany's study, 222 deaths age one month - four years would have been expected if data had been available from all sources: registration, surveys and monthly reporting system. There were 193 recorded in the health units of these four villages or 87% of the number expected.

The conclusion is that if the program can produce a 1/3 or greater reduction in child mortality from diarrhea, it will be possible to measure this with statistical significance through the use of the two surveys, the official reporting system and interviews with the families of children who die.

Finally, it will be possible to observe any changes in hospitalization rates for children with diarrhea through the monthly hospital report (Appendix F) and through an annual review of hospital records. This is not likely to contribute much to evaluation of effect, since hospitalizations may rise as a result of increased consciousness of treatment possibilities. Nevertheless, it will be important to observe what happens since hospital treatment could produce a mortality effect independent of that resulting from oral therapy.

The monthly hospital report will be an additional source to identify diarrhea deaths from intensive study villages - deaths in hospital, away from village, are not usually registered in the village.

#### D. PROPOSED TIME SCHEDULE FOR THE PROJECT

- Feb. 15 - Mar. 30, 1979: Training for canvassers, medical personnel, social service workers and village committees. (Training of school teachers, religious leaders, etc. can continue through the next six months)
- Mar. 15 - Apr. 30: Distribution and canvass in the first three counties.
- Mar. 15 - May 1: Intensive survey of two sample populations. (50,000 each)
- June 1-5: First utilization survey of 200 families. (timed to be at start of diarrhea season)
- June 1-15: Training of death investigators after which investigation of deaths among under 5 children in sample population will begin.

June 21: Decision on need for repeat canvass.  
Oct. 1: Second utilization survey.  
Jan., 1980: Preliminary analysis of mortality effects in 1979  
Mar. 15 - May 1: Repeat of intensive sample survey.  
April: Third utilization survey.  
July: Final analysis of 1979 mortality effect.  
\_\_\_\_\_ Distribution in second three counties.  
Jan. 1981: Preliminary analysis of 1980 mortality effect.  
\_\_\_\_\_ Distribution in final two counties of  
Menoufia Governorate.  
Mar. 15 - May 1: Final intensive survey in sample population.  
Dec., 1981: Final report on effect of diarrhea program.

## REFERENCES

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2. From official records (raw data) in Shebin-el-Kom. Rates are calculated using denominators from census of November, 1976 (for ages 1-4) and from recorded births for 1978 (for infant mortality rate).
3. Kielmann, A. and C. McCord, J. Trop. Ped. and Env. Child Health, 1977, pp. 197-201.
4. Nader Fergany, "Population Characteristics and Change in a Rural Egyptian Community", Social Research Center, American University in Cairo, December 1975 (mimeographed report).
5. Weir, J., Journal of the Egyptian Public Health Association, 1952, pp. 55-114.
6. Reports are in UNICEF files and with Dr. Lutful al Sayaad.
7. Kielmann, A. and C. McCord, Lancet, 1:1247, 1978.

## APPENDIXES

**APPENDIX A**

**Label for the Bottle  
(English and Arabic)**

APPENDIX - A

LABEL FOR THE BOTTLE

Side - 1

Directions

1. Put one full packet of Dawal Ishal into this bottle.
2. Add clean water to fill the bottle.
3. Shake the bottle until medicine is completely dissolved.
4. Give the medicine slowly for the first hour (one teaspoon at a time).
5. Then give as much as the baby will take, but still frequent small amounts.
6. For a baby less than one year - 3/4 of a bottle in one day.
7. For a baby over one year - 1 or 2 bottles in one day.

Side - 2

This bottle is for:

ORALYTE Label reproduced (same color)
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THE BOTTLE IS FOR YOUR BABY'S MEDICINE KEEP IT CLEAN  
DO NOT PUT KEROSENE OR OIL IN IT.  
THROW AWAY MEDICINE NOT USED AFTER 24 HOURS.

( تكتب على الجانب الأول من الزجاجة )

الإرشادات

- ١ - فرغى باكوا كامل من دوا الاسهال فى هذه الزجاجة •
- ٢ - املئ الزجاجة بماء نظيف واغليها كويس •
- ٣ - رجي الزجاجة لغاية دوا الاسهال ما يدوب فى المية كويس
- ٤ - اعطى الدوا لطفلك بكميات صغيرة • معلقة صغيرة كل مرة خلال الساعة الاولى
- ٥ - زد دى الكمية حسب ما يحتاج طفلك وبرهه على فترات •
- ٦ - اذا كان طفلك عمره اقل من سنة فهو يحتاج الى  $\frac{3}{4}$  الزجاجة فى اليوم •
- ٧ - اذا كان طفلك عمره من سنة الى ٥ سنوات فهو يحتاج ما بين زجاجة الى زجاجتين فى اليوم •

( على الجانب الثانى من الزجاجة )

- هذه الزجاجة تستعمل لـ

يكتب بالانجليزية عنـوان  
دوا الجفاف المستعمل  
كما هو مبين على الباكـو

ملحوظة : اخفضى بهذه الزجاجة نظيفة ولا تضعى بها اى سوائل غير الدوا مشـلا  
لا تضعى بها زيت او جاز او غيره •

**APPENDIX B**

**Instructions  
(English and Arabic)**

## APPENDIX - B

(A literal translation from Arabic back to English. Some modifications have been made on the last page for incorporation into the final Arabic version).

### Instructions for The Treatment of Children (age between a week and five years) suffering from dehydration resulting from diarrhea.

The moment you notice that your child (age between a week and five years) has diarrhea, which means a liquid like stools, you have to give him this diarrhea treatment. It is very important to follow the following:

First: The way medicine is prepared:

1. A whole packet is emptied in the bottle we gave you.
2. Fill the bottle with clean water from the tap or the water pump. Then close it firmly.
3. Shake the bottle until the diarrhea medicine is absolutely dissolved in water.

Second: The quantity of treatment given to a child:

1. If your child's age is less than a year, in this case, he is in need of  $\frac{3}{4}$  of the bottle, in other words more than half the bottle per day. Do not give it all at one time, give it gradually.

Third: The way the medicine is given to the children:

- If your child is very young (less than a year) and does not know how to drink from the glass, try to give him the medicine by spoon. Be patient with him because he has to compensate the liquids which his body has lost as a result of diarrhea. In the beginning give him small quantities, a spoon by a spoon on short time intervals until 10 spoons. After this increase the quantity as much as he needs. The point is that you must give him the required quantity, which is a bit more than half the bottle per day, to be given gradually and not at one time.

If your child's age is more than a year, and he knows how to drink from the glass, let him drink less than half a glass. Do not give him a full glass all at once. After a

short time, let him drink some more. Then increase the quantity as much as he needs. It is important to make sure that he has taken the required quantity which is from one bottle to two bottles until the end of the day. It is given gradually and not at one time.

- If your child did not take the whole medicine at the same day, and some of the medicine was left to the next day, throw it away and prepare another new medicine.
- If you happen to use one of the two packets given to you then go to the health unit and get another one. This is done to make sure that you always have two packets, also to give you a chance to talk with the doctor or the nurse about the condition of your child.

**Fourth: Nutrition during and after the treatment of diarrhea:**

1. Lactating children: It is very important to go on lactating your child while he is suffering from diarrhea. Do not stop lactating your child because lactation is very essential for his nutrition on the one hand and for compensating the liquids his body has lost as a result of diarrhea on the other hand. No harm would result from lactating the child during the diarrhea.
2. Children from 6 months to 5 years age: If your child is taking any food besides his mother's breast, the baby needs this food during diarrhea and after curing from diarrhea. During diarrhea give small quantities of boiled food and after diarrhea the quantity of food should be increased to compensate that which has been lost.

**Notice:**

- If the diarrhea continues to the next day inspite of his taking the required quantity of medicine, keep on giving him the medicine that next day, but throw away any leftover old medicine and prepare a new bottle.

**TAKE YOUR CHILD TO THE DOCTOR -**

- If the child continues to vomit and cannot take fluids.
- If the child is too weak to take fluids.
- If the diarrhea increases or becomes bloody.

تعليمات  
علاج الجفاف الناتج من الاسهال عند الاطفال  
في السن من اسبوع هي ٥ سنوات

\* اول ما تلاحظى ان طفلك اللى عمره اسبوع لحد ٥ سنوات جاله اسهال يعنى بيتبرز بهراز سائل  
أديله دوا الاسهال مع ضرورة اتباع ما يلى :-

أولا : طريقة تحضير الدواء

- ١ - فرغى باكو كامل من دوا الاسهال فى الزجاجه اللى عطيناها لك مع الدوا .
- ٢ - املئى الزجاجه بماء نظيف من الحنفية او الطلبة واطلبها كويس .
- ٣ - رجى الزجاجه لفاية دوا الاسهال ما يدوب فى المية كويس .

ثانيا : كمية الدواء اللى يمكن اعطاها للطفل

- ١ - اذا كان ابنك عمره اقل من سنة فى الحالة دى يحتاج الى  $\frac{3}{4}$  زجاجة يعنى أكثر من نصف الزجاجه بشوية فى اليوم وتعطى على فترات فى <sup>يوم</sup> مره واحدة .
- ٢ - ولو كان ابنك عمره أكثر من سنة فى الحالة دى يحتاج من زجاجة الى زجاجتين فى اليوم وتعطى على فترات ، مش مره واحدة .

ثالثا : طريقة اعطاء دوا الاسهال للطفل

- ١ - لو كان طفلك صغير وأقل من سنة وما يعرفش يشرب من الكباية حاولى انك تديله الدوا بالمعلقة وكونى صبوره معاه عشان تعويضه السوائل اللى جسمه فقد ها نفسى الاسهال . فى البداية شربه كميات صغيره معلقة معلقة على فترات قصيره لحسد .  
١٠ معالق . وبعد كده ذودى كمية الدوا لطفلك حسب ما هو عايز . المهم انك تديله الكمية المطلوبة وهى أكثر من نصف الزجاجه بشوية طول اليوم وعلى فترات مش مره واحدة .

- ٢ - لو كان طفلك أكبر من سنة ويعرف يشرب من الكباية شربه فى البداية شوية دوا اقل من نص الكباية ولا تعطيه كباية مداينه وبعد فتره قصيره اعطيه شويه ثانى وبعد كده ذودى الكمية حسب ما هو عايز ، لكن المهم انك تتأكدى انه شرب الكمية المطلوبه وهى من زجاجة الى زجاجتين حتى نهاية اليوم وعلى فترات ومش مره واحدة .

٣ - لو ان طفلك ما شربش الدواء كله فى نهاية اليوم وفضل حتى اليوم الثانى ، ارميه وحضرى دوا الاسهال من اول وجديد .

٤ - لو حصل انك استعملتى باكو دواء من الاثنين اللى عندك ، روحى للوحده الصحية وخذى واحد ثانى علشان يكون معاك باستمرار باكوين . وكان عشان يكون عندك فرصة تتكلمى مع الدكتور او المرصه عن حالة طفلك .

#### رابعاً : التغذية اثناء وبعد الشفاء من الاسهال

١ - الاطفال اللوز يترضع : من المهم جدا الاستمرار فى ارضاع طفلك وهو عنسنده اسهال ، ولا تمنعى عنه الرضاعة لان الرضاعة ضرورية جدا لتغذيته ولتعويضه السوائل اللى جسمه فقد ها فى الاسهال . وانه ليس هناك اى ضرر من الرضاعة والطفل عنده اسهال .

٢ - الاطفال سن ٦ شهور حتى ٥ سنوات : اذا كان الطفل بياخذ اكل خارجى مع الرضاعة فالابد أن تهتمى بأكله ده بعد الاسهال ما يروح ولازم تزودى له كمية الاكل لتعويضه اللى فقد ه جسمه فى الاسهال .

ملحوظة : لو ان الاسهال استمر مع طفلك حتى اليوم التالى على الرغم من انك شربته كمية الدواء المطلوبة ، ساتمرى فى اعطائه الدواء فى اليوم التالى بعد تحضيره من اول وجديد . ولو حسيتان حالة الاسهال زادت ، اذهبى الى الوحده الصحية واعرضى طفلك على الطبيب .

## **APPENDIX C**

**Questions and Answers  
(English and Arabic)**

## APPENDIX - C

### DIARRHEA AND DEHYDRATION: THE ENEMIES OF CHILDREN

Diarrhea kills more children than any other disease in Egypt. These deaths can be prevented if you give the right treatment at home. Every mother and father should learn to do this.

Mothers and fathers must understand that children's lives can be saved if dehydration is prevented and that they can do this by properly using Dawal Eshal (medicine for diarrhea). The attached sheet gives clear instructions but you will be asked questions. Here are some answers to the common questions:

1. Why is diarrhea dangerous?

Diarrhea has many different causes, but the results are always the same. If it continues long:

The body becomes dried out because it loses water

The body becomes weak because it loses salt and food in the diarrhea stool.

2. What is Dawal Eshal?

When it is properly mixed, Dawal Eshal contains the same amount of salt, water and sugar as the diarrhea fluid lost by the patient. If we give salt, water and sugar by mouth as fast as it is lost, the body will not become dried out and weak and if God wills the patient will not die.

3. How much OralYTE Sherbet or Dawal Eshal should be given?

Give as much as the patient has lost. The more diarrhea, the more sherbet is needed. If a baby less than one year old is very sick, it will need 3/4 bottle containing 1 liter per day ( a 1 liter bottle has been given to the mothers). A sick older child may need 1 or 2 liters or even more.

4. What if the baby won't take the sherbet?

Baby with diarrhea will almost always like the sherbet very much because the baby needs it, but if they are weak or small it must be given in small feedings, frequently. If the child vomits, don't stop giving small feedings - almost always the vomiting will stop.

5. Can we give too much?

This is not likely, because children won't take more than they need. But be careful not to measure too much OralYTE powder. One full packet for one bottle (1 liter) is correct.

6. When should Oralalyte Sherbet be started?  
 Start Oralalyte as soon as watery stools start. Don't wait for weakness and drying out - it may be too late then.
7. Can't we give antibiotics and other medicine to stop the diarrhea?  
 Yes, doctors sometime recommend antibiotics but unfortunately these medicines don't always stop the diarrhea soon enough to prevent dehydration, The purpose of Dawal Eshal is to replace fluid so that dehydration does not take place.
8. Can all children with diarrhea be treated at home?  
 Almost everyone can, but some must go to the clinic or hospital:  
 -If there is vomiting which does not stop.  
 -If the child is so weak that it cannot take Oralalyte sherbet  
 -If drying out is present.
9. What are the signs of dangerous drying out?  
 The most important sign is weakness, particularly if a child is so weak that it can't take much food. You can also look for:  
 -Sunken eyes  
 -Sunken fontanelle  
 -Loose skin  
 Take these children to a hospital but do your best to give Oralalyte sherbet on the way - usually they will get better with this treatment.
10. You talk only about children. Don't adults become sick with diarrhea?  
 Yes they do, but an adult has a bigger body so they can lose more water, salt and food before they become dried out.  
 If adults do have serious diarrhea they can take the same treatment with Oralalyte-Sherbet but they need more of it.
11. Why do you say "continue breast feeding"? Doesn't this make diarrhea worse?  
 Babies need food and they need more food when they have diarrhea. The best food for a baby is breast milk. Small babies should have both breast milk and Dawal-Eshal when they have diarrhea.
12. Why do you give extra food after recovery from diarrhea?  
 Children lose weight when they have diarrhea. The only way to regain this weight is to take more food after diarrhea. If children don't regain weight, they are in a weakened condition and very likely to have more diarrhea and become weaker and weaker. The extra food is very important.

13. If a child still has diarrhea after he has taken the correct amount of Dawal Eshal for a whole day, should we still give this medicine?

Yes. Babies often have diarrhea for several days. As long as they are losing fluid they need replacement of what is lost. Dawal Eshal is the best way to do this.

14. In some clinics there are two different kinds of packets with powder for diarrhea. One is a blue and white packet and the other is red and white. Are they both the same thing?

Yes, the powder is exactly the same but if you compare you will see that the blue and white packet contains 5 times as much. All of the instructions we have given are for the large blue and white packet, which is called "UNICEF ORAL REHYDRATION SALTS". If you use the red and white packet, called REHYDRAN it should be mixed with a smaller amount of water according to the instructions (in Arabic) on the packet.

الاسهال والجفاف عند الأطفال

يسبب الاسهال أعلى نسبة وفيات بين الأطفال في مصر اذا ما قورنت بالوفيات الناجمة عن الاصابة بالأمراض الأخرى . ولكنه يجب أن يعلم الآباء والأمهات أنه في مقدورهم تقديم العلاج الصحيح لأطفالهم في المنزل الأمر الذي سيؤدي بالتأكيد الى تقليل وفيات الأطفال من الاسهال الى أدنى حد ممكن .

ان الاسهال يؤدي الى الجفاف عند الأطفال حيث أن الجسم يفقد نسبة كبيرة من الماء والملح والسكر والأمر الذي يؤدي الى ارتفاع نسبة وفيات الأطفال ، الا انه يجب على الآباء والأمهات ان يعرفوا أن يمكنهم انقاذ حياة أطفالهم بالعمل على عدم وصولهم الى حالة الجفاف هذه وذلك باستعمال دواء الاسهال .

ان ورقة تعليمات علاج الاسهال/تحتوى على كل ما يجب اتباعه عن كيفية تحضير واستعمال هذا الدواء . الا انه من المحتمل ان توجه اليكم بعض الاسئلة من السيدات ، وفيما يلي الاجابات عن بعض هذه الاسئلة المتوقعة :-

١ - لماذا يعتبر الاسهال خطيرا ؟

الاجابة : للاسهال أسباب كثيرة ولكن جميعها تؤدي الى نفس النتائج وخاصة اذا استمر اسهال الطفل مدة طويلة . ان الاسهال يؤدي الى :  
أ - جفاف الجسم لفقد كمية كبيرة من السوائل .  
ب - ضعف الجسم لفقد الملح والطعام .

٢ - ما هو دواء الاسهال ؟

الاجابة : اذا تم تحضير دواء الاسهال بالطريقة الصحيحة ، فانه يحتوى على كمية الملح والماء والسكر التي يفقدها الجسم في الاسهال كما انه اذا أعطينا هذا الخليط للطفل عن طريق الفم بنفس السرعة التي يفقدها الجسم في الاسهال ، فان جسم الطفل :

أ - لن يجف .  
ب - لن يضعف ، وبإذن الله لن يموت .

٣ - ما هي كمية الدواء التي يجب أن تعطىها للطفل ؟

الاجابة : يجب اعطاء الطفل كمية من سائل دواء الاسهال مساوية للكمية التي يفقد ها جسمه في الاسهال ، وسنائه عاوي ذلك فكلما زاد الاسهال كلما زادت حاجة الطفل الي زيادة كمية دواء الاسهال التي تعطى له . فالطفل الذي عمره أقل من سنة وعنده اسهال شديد : فانه يحتاج بما يعادل  $\frac{1}{2}$  الزجاجة التي تم توزيعها يوميا . وسعتها لتر واحد الي ان يشفى الطفل من الاسهال تماما . أما الطفل الذي عمره سنة حتى ٥ سنوات وهذه اسهال شديد

٤ - متى من زجاجة الي زجاعتين أي ما يرازي من لترالي لترين يوميا أو أكثر حتى يشفى الطفل من الاسهال تماما أو اكثر حسب درجة شدة الاسهال .

٤ - ماذا نعمل اذا رفض الطفل أخذ دواء الاسهال ؟

الاجابة : ان الطفل الذي عنده اسهال فانه غالبا ما يتقبل دواء الاسهال لحاجة جسمه اليه ، ولكن اذا كان الطفل ضعيفا أو صغيرا فانسه يجب اعطائه دواء الاسهال بكمية صغيرة على فترات متتالية . كما انه اذا نقياً الطفل الدواء فانه يجب أيضا العمل على اعطائه كميات صغيرة منه ، ومادة سيتروفالقي .

٥ - هل يمكن/نمطي للطفل كمية دواء اسهال أكبر مما يحتاجه ؟

الاجابة : من المعروف ان الطفل لن يأخذ كمية الدواء الا الكمية التي يحتاجها جسمه فقط ، ومن المهم جدا أن تتأكد من أنك ليس تسمى كمية برودة من دواء الاسهال أزيد مما هو مقرر طبيا للتعليمات حيث أن باكو واحد كامل من برودة الاسهال يذاب في زجاجة مساء وهذه الزجاجة تعادل لتر ماء واحد . وهي الكمية الصحيحة .

٦ - متى يجب البدء في استعمال دواء الاسهال ؟

الاجابة : يجب البدء في اعطاء الطفل دواء الاسهال في الحال فور ان يصاب بالاسهال ، ولا تنتظري الى أن تظهر عليه أعراض الجفاف أو أن يضعف جسمه لأن هذا قد يكون متأخرا فسي علاج حالته .

٧ - هل نستطيع اعطاء الطفل اللب عند اسهال مضادات حيوية أو أدوية أخرى لا يقف الاسهال ؟

الاجابة : نعم ، فانه احيانا يصف الطبيب مضادات حيوية لعلاج الاسهال ، ولكن للأسف هذه المضادات الحيوية لا تتوقف حالات الاسهال بسرعة كافية قبل حدوث الجفاف . وليس ذلك فان استعمال دواء الاسهال من شأنه تعويض الطفل السوائل التي فقد ها جسمه .

٨ - هل يمكن علاج كل حالات اسهال الاطفال في المنازل ؟

الاجابة : يمكن علاج <sup>بعض</sup> حالات اسهال الاطفال في المنازل ، الا ان يوجد بعض حالات اسهال لا بد من علاجها في الوحدة الصحية أو المستشفى وهذه الحالات هي :-

- أ - حالات التي لا تتوقف .
- ب - اذا كان الطفل ضعيفا جدا لدرجة أنه لا يستطيع ابتلاع دواء الاسهال .
- ج - اذا حدث الجفاف فعلا قبل اعطائه الدواء .

٩ - ما هي علامات الجفاف الحظيرة ؟

- الاجابة : أهم هذه العلامات هي الضعف التي تظهر في :
- أ - عدم مقدرة الطفل على ابتلاع دواء الاسهال .
  - ب - أن تصبح عينيه غائرتين للداخل .
  - ج - أن يصبح وسط رأس الطفل غائرا للداخل .
  - د - أن يصبح جلد الطفل مترهلا .

ولذلك يجب الإسراع إلى الوحدة الصحية أو المستشفى  
بمراه الأطفال ، كما أنه يجب أيضا محاولة إعطاء هـ  
الأطفال دواء الاسهال وهم في طريقهم إلى الوحدة الصحية  
أو المستشفى وإذا تم ذلك فإنه قد تتحسن صحتهم .

١٠ - لماذا نتكلم فقط عن اسهال الأطفال ؟ هل الاسهال لا يصيب الكبار أيضا ؟

الاجابة : نعم ، ان الاسهال يصيب الكبار أيضا ولكن أجسامهم لديهم  
القدرة على تحمل فقد كمية السوائل دون حدوث جفاف لهم  
بالسرعة التي تحدث للأطفال . إلا أنه إذا حدث للكبار اسهال  
شديد فلا مانع من إعطائهم دواء الاسهال ولكن بكميات أكبر .

١١ - لماذا نقول يجب ان تستمر الام في ارضاع الطفل من الثدي اثناء الفترة التي

يصاب بها بالاسهال ؟ هل الرضاعة من الثدي لا تزود الاسهال ؟

الاجابة : ان الأطفال يحتاجون إلى التغذية ، ويحتاجون إلى تغذية أكثر  
إذا كان عندهم اسهال .

وان أصلح غذاء للطفل هو الرضاعة الطبيعية من الثدي ، ولمعالجة  
الأطفال من الاسهال يجب إعطائهم دواء الاسهال مع عدم منسوع  
الرضاعة عنهم .

١٢ - لماذا يجب الاهتمام بزيادة كمية الغذاء للطفل بعد شفائه من الاسهال ؟

الاجابة : ان الاسهال يؤدي إلى انقاص وزن الطفل ، والطريقة الوحيدة  
لإعادة الخنل لوزنه الطبيعي هو تزويد كميات الغذاء تدريجيا  
التي تعطى له بعد شفائه . ويجب أن يكون معروفا جيدا أنه  
إذا لم يعد الخنل إلى وزنه الطبيعي بعد شفائه من الاسهال فإنه  
قد يصبح ضعيفا ، وهذا الضعف سيؤدي بدوره إلى تعرض الطفل  
مرة ثانية للاسهال ، وهذا الاسهال سيضعفه أكثر وأكثر .  
ولذلك فإن الاهتمام بزيادة كميات الغذاء للطفل بعد شفائه من  
الاسهال ضروري وهام جدا .

١٣ - اذا استمر الاسهال عند الطفل رغم تناوله لكل كمية الدواء المفروض تناولها

في اليوم الواحد ، فهل تستمر في اعطائه الدواء في اليوم التالي ؟

- الاجابة : نعم ، فالاطفال عادة ما يحاربون بالاسهال لعندة ايسسام .  
فطالما الطفل يفقد كمية من السوائل من جسمه اثناء اصابته  
بالاسهال ، فهو في حاجة الى ما يعوض هذه الكميات مسن  
السوائل خلال تناوله دواء الاسهال .

APPENDIX - D

(FOR ALL HEALTH UNITS IN SHEBIN EL KOM, TALA AND EL SHOHADA)

CLINIC DIARRHEA REGISTER:

Each time a packet of UNICEF oral salts is used at home, the family will go to the nearest health unit for a replacement. One or two packets will be given as needed, and the name and address of the receiving family will be recorded in this book:

<u>Date</u>	<u>Name of Head of Family</u>	<u>Village</u>	<u>Address in Village</u>	<u>Number of Packets Given</u>	<u>Did Patient Come to Clinic?</u>
-------------	---------------------------------------	----------------	-------------------------------	--	--

APPENDIX - E

VILLAGE HEALTH UNIT REPORT FORM\*

Date: \_\_\_\_\_

Month Covered by Report: \_\_\_\_\_

Village Name: \_\_\_\_\_

Country: \_\_\_\_\_

Name of Reporting Doctor: \_\_\_\_\_

Number of cases seen in clinic  
with Diarrhea, Gastroenteritis  
or dysentery in this month: \_\_\_\_\_

Number of cases with these complaints sent to  
the hospital: \_\_\_\_\_

Number of packets of UNICEF  
oral salts given to patients  
or patients families: \_\_\_\_\_

Number of packets of Rehydran given out: \_\_\_\_\_

Number of packets of UNICEF oral salts in your stock: \_\_\_\_\_

Signature

---

\*For all units in Shebin-el-Kom, Tala and El Shohada

APPENDIX - E(2)

VILLAGE HEALTH UNIT REPORT FORM\*

Date: \_\_\_\_\_

Month Covered by Report: \_\_\_\_\_

Village Name: \_\_\_\_\_

Name of Reporting Doctor: \_\_\_\_\_

Number of cases seen in clinic with Diarrhea,  
Gastroenteritis or Dysentery in this month: \_\_\_\_\_

Number of cases with these complaints sent  
to the hospital: \_\_\_\_\_

Signature

---

\*For selected units in El Bagour, Menour and Ashmoun

APPENDIX - F

HOSPITAL REPORT FORM

Date: \_\_\_\_\_

Month Covered by Report: \_\_\_\_\_

Hospital Name: \_\_\_\_\_

County: \_\_\_\_\_

Name of Reporting Doctor: \_\_\_\_\_

Number of cases seen in clinic with Diarrhea, Gastroenteritis or Dysentery in this month: \_\_\_\_\_

Number of cases with these complaints admitted to the hospital: \_\_\_\_\_

Number who died in the hospital: \_\_\_\_\_

Number dead on arrival at hospital: \_\_\_\_\_

For each patient who died with this diagnosis:

<u>Name</u>	<u>Father's Name</u>	<u>Sex</u>	<u>Age</u>	<u>Village Name</u>	<u>County</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Number of packets of UNICEF Oral salts given to patients in this month: \_\_\_\_\_

Number of packets in your stock: \_\_\_\_\_

Signature \_\_\_\_\_

APPENDIX - G

CONSOLIDATED HEALTH UNIT AND HOSPITAL REPORT\*

Month: \_\_\_\_\_ Year: \_\_\_\_\_

<u>Health Units</u>	<u>Diarrhea Cases</u>	<u>Oralyte Packets Dispensed</u>	<u>Rehydran Packets Dispensed</u>	<u>Cases Referred to Hospital</u>	<u>Packets of Oralyte in Stock</u>
_____					
_____					
_____					
_____					
(Total Shebin-el-Kom) .					
_____					
(Total Tala)					
_____					
_____					
(Total El-Shohada)					
GRAND TOTAL					

\*Data to be collected from health units in only 3 counties, but from all hospitals in Menoufia

APPENDIX - G (continued)

CONSOLIDATED HEALTH UNIT AND HOSPITAL REPORT\*

<u>Hospitals</u>	<u>Diarrhea Cases in Clinics</u>	<u>Oralyte Packets Dispensed</u>	<u>Rehydran Packets Dispensed</u>	<u>Patients Admitted to Hospital</u>	<u>Paties Died in Hospital</u>	<u>Patients Dead on Arrival</u>	<u>Packets of Oralyte in Stock</u>
_____							
_____							
_____							
_____							
_____							
_____							
_____							
<b>TOTAL</b>							

---

\*Data from health units in only 3 counties, but from all hospitals in Menoufia.

APPENDIX - H

DEATH INVESTIGATION FORM

Report Number \_\_\_\_\_

Village \_\_\_\_\_ Village Number \_\_\_\_\_

House Number \_\_\_\_\_

Name \_\_\_\_\_ Sex: M \_\_\_\_\_ F \_\_\_\_\_

Father's Name \_\_\_\_\_

Mother's Name \_\_\_\_\_

Address \_\_\_\_\_

Date of Death Day \_\_\_\_\_ Month \_\_\_\_\_ Year \_\_\_\_\_

Date on Death Certificate Day \_\_\_\_\_ Month \_\_\_\_\_ Year \_\_\_\_\_

Date Death was Reported to Government Day \_\_\_\_\_ Month \_\_\_\_\_ Year \_\_\_\_\_

Date of Birth: \_\_\_\_\_

Age: Years \_\_\_\_\_ Months \_\_\_\_\_ Days \_\_\_\_\_

Age on Death Certificate: Years \_\_\_\_\_ Months \_\_\_\_\_ Days \_\_\_\_\_

Was Death due to Accident? Yes \_\_\_\_\_ No \_\_\_\_\_

Kind of Accident \_\_\_\_\_

During the month before death, did the child have:

	<u>Yes</u>	<u>No</u>	<u>How Many Days?</u>
Diarrhea (Number of Stools/day _____)	_____	_____	_____
Dysentery (Number of Stools/day _____)	_____	_____	_____
Blood in Stool	_____	_____	_____
Vomiting (Number of Vomits/day _____)	_____	_____	_____
Swelling of feet or body or eyes	_____	_____	_____
Rash	_____	_____	_____

APPENDIX - H (continued)

Death Investigation Form (continued):

	<u>Yes</u>	<u>No</u>	<u>How Many Days</u>
Fever	_____	_____	_____
Cough	_____	_____	_____
Difficult Breathing	_____	_____	_____
Convulsions	_____	_____	_____

Does the mother (or other family member) think this child lost weight in the month before death? Yes \_\_\_\_\_ No \_\_\_\_\_

If answer is yes, why was there weight loss? \_\_\_\_\_

Describe symptoms and the timing of symptoms before death:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Family's opinion of cause of death:

\_\_\_\_\_

Investigating doctor's or nurse's diagnosis:

Primary cause: \_\_\_\_\_

Underlying or associated cause: \_\_\_\_\_

Final conference diagnosis (must be taken from list of causes):

Primary cause: \_\_\_\_\_

Underlying or associated cause: \_\_\_\_\_

Name of conference participants:

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

Name of investigating doctors:

Name of investigating nurse:

APPENDIX - I

LIST OF CAUSES OF DEATH

Acute Diarrhea  
Acute Dysentery  
Chronic Diarrhea (over 2 weeks)  
Chronic Dysentery (over 2 weeks)  
Malnutrition  
Pneumonia  
Accident (includes drowning, burns and death due to trauma of  
any kind)  
Measles  
Chicken Pox  
Diphtheria  
Whooping Cough  
Tetanus  
Fever  
Tuberculosis  
Chronic Lung Disease (not tuberculosis)  
Liver Disease  
Anemia  
Skin Infection (includes infected rashes, boils and abscesses)  
Sore Mouth  
Prematurity, Birth Injury and Asphyxia of the Newborn  
Congenital Anomaly  
Acute Abdomen  
Other  
Unknown

APPENDIX - I (continued)

"Primary Cause" is the immediate cause of death.

"Underlying or associated cause" is an important contributing cause of death which may or may not be related directly to the primary cause.

For example \_\_\_\_\_

1. A child has malnutrition for a year, fails to gain weight, develops severe diarrhea in the last week of life and dies:

Primary cause - Acute Diarrhea

Underlying cause - Malnutrition

2. A baby's mother has no breast milk after the 4th week and there is no available substitute. The baby loses weight steadily, becomes marasmic and dies. There is diarrhea in the last 3 weeks of life.

Primary cause - Malnutrition

Underlying cause - Chronic Diarrhea

If you cannot decide what caused death, list it as "unknown".

If you can make a diagnosis, but it is not on the list, call it "other" and write in your own diagnosis.

APPENDIX - J

Questionnaire No: \_\_\_\_\_

Integrated Service Development Project  
(Health, Social Service and Family Planning)

Round No: \_\_\_\_\_

TEST FOR WOMEN WHO HAVE BEEN TRAINED  
PREPARE DAWAL ISHEL

Date: \_\_\_\_\_

Name of village \_\_\_\_\_

County \_\_\_\_\_

Governorate \_\_\_\_\_

Number of house \_\_\_\_\_ Address \_\_\_\_\_

Data Collection Process

<u>Reason Not Finished</u>	<u>Interview</u>		<u>Date</u>	<u>Name of Investigator</u>	<u>Home Visits</u>
	<u>Finished</u>	<u>Not Finished</u>			

Data Checking

<u>Checker Observation</u>	<u>Date</u>	<u>Name of Checker</u>	<u>Type of Check</u>
			Office
			Field

APPENDIX - J (continued)

1) Please list all children under 5 years of age in this family:

<u>Age</u>	<u>Sex</u>
_____	_____
_____	_____
_____	_____
_____	_____

2) Have you been visited by someone to show you how to prepare Dawal Eshel

Yes \_\_\_\_\_ No \_\_\_\_\_ If Yes, When? \_\_\_\_\_

3. Do you have Dawal Ishel powder?

Yes \_\_\_\_\_ No \_\_\_\_\_ (ask to see it) \_\_\_\_\_

How many packets? \_\_\_\_\_ What kind of packet? Oralyte \_\_\_\_\_

Rehydran \_\_\_\_\_ Other \_\_\_\_\_

4. Do you know where to go to get new packets?

Yes \_\_\_\_\_ No \_\_\_\_\_

Where? \_\_\_\_\_

Have you been there?

Yes \_\_\_\_\_ No \_\_\_\_\_

How many times \_\_\_\_\_

Did you get packets?

Yes \_\_\_\_\_ No \_\_\_\_\_

5. Did any of your children under 5 have diarrhea since the day they gave you Dawal Ishel?

Yes \_\_\_\_\_ No \_\_\_\_\_

<u>Age of Child</u>	<u>How Many Times Diarrhea</u>
_____	_____
_____	_____
_____	_____
_____	_____

6. Did you give the child Dawal Ishel (if yes to 5)?

Yes \_\_\_\_\_ No \_\_\_\_\_ Why Not? \_\_\_\_\_

How many packets have you used since you first received the medicine \_\_\_\_\_

APPENDIX - J (continued)

7) Would you use Dawal Ishel now if one of your babies had diarrhea?

Yes \_\_\_\_\_ No \_\_\_\_\_ (Why not? Give all reasons in detail):

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---

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8) If your child had diarrhea, when exactly would you give Dawal Ishel  
(Write exact words if the person answering)

8 \_\_\_\_\_

---

---

9) How much Dawal Ishel would you give the baby? (Write exact words of  
person answering) (state age of the baby)

---

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10) How long will you continue to give this much?

---

11) Do you keep nursing the baby while there is diarrhea?

Yes \_\_\_\_\_ No \_\_\_\_\_ (Why? Write exact words): \_\_\_\_\_

---

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12) Do you give your baby extra food after it is cured from diarrhea?

Yes \_\_\_\_\_ No \_\_\_\_\_

APPENDIX - J (continued)

13) Would you please take this packet of Dawal Ishel and prepare the solution for me?

Instruction for Investigator:

- First:
- 1) Don't interfere in preparation at all.
  - 2) Don't give any instructions.
  - 3) Don't say right or wrong or give feeling of satisfaction or dissatisfaction.

Second: Record exactly your observations:

1) Did the woman use the correct bottle?

No \_\_\_\_\_ Yes \_\_\_\_\_

a) Describe any other container used \_\_\_\_\_

b) Amount of Powder Full Packet \_\_\_\_\_ Other (Specify) \_\_\_\_\_

c) Amount of water Full bottle \_\_\_\_\_ Other (specify) \_\_\_\_\_

For the investigator:

Take the solution prepared before you and bring it to the office. Thank you.

Give any necessary advice or corrections at the end of interview.

Ask the mother: Do you have any suggestions to improve the program?

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## APPENDIX - K

### CHILDHOOD MALNUTRITION IN EGYPT

The data presented graphically in Figure 3 is taken from the CDC nutrition survey conducted in 1978. The weight for height distribution suggests a relatively obese population of children under 6 and this has naturally been interpreted by some as showing that there is no nutritional problem in Egypt. Certainly there is less protein-calorie malnutrition than in most developing countries with mortality rates as high as those in that country, but a review of the data shows that there is a high proportion of severely malnourished children at the weaning age and that weight for height is probably not a good index of malnutrition in a population with a nutritional problem concentrated at this age.

First of all, Figure 3 shows a fairly severe amount of stunting: median height for age is more than one standard deviation below the CDC median. This presumably reflects a nutritional insult to many children occurring at an earlier age than that of most of the population (since the population as a whole is "obese"). Since weight for height is considered to be an index of acute malnutrition it should be possible to look at the proportion severely malnourished by this index in younger age groups and find the point at which this insult occurs. In Figure 2 there is a slight rise at 12-23 months, but weight for age and height for age both show much sharper rises. It is likely that these "less sensitive" indicators have revealed a significant amount of malnutrition concentrated at weaning age. The 17% of the population which is less than 75% of "standard" weight for age would be expected to have mortality rates at least 3 or 4 times greater than the rest of the population.<sup>(7)</sup>

The probable reason for failure of weight for height to perform the way the popular wisdom thinks it should is not complicated: What we are really interested in is velocity of growth. Any insult which stops growth is a serious problem. Children at weaning age are growing very fast in both weight and height, so both are simultaneously affected and little change is seen in an index which combines both.

Unfortunately, weaning age malnutrition is a problem in all developing countries. An index which is not sensitive to this is not much use. CDC could help to clarify the situation by analyzing their surveys from other countries in a similar way to see if the same pattern recurs. They could also do a more elegant analysis than has been possible here, with access to the original data.

APPENDIX - K (continued)

Incidentally, a study of subsequent mortality in a group of Bangladesh children age 12-23 months who had undergone a nutrition survey, shows that weight for age and height for age were both more sensitive and more specific indicators of mortality risk than weight for height. (R. Bairagi's review of data from the Cholera Research Laboratory)

## FIGURES

FIGURE I

EGYPT - 1978  
Prevalence of "Severe" Malnutrition, by Age Groups

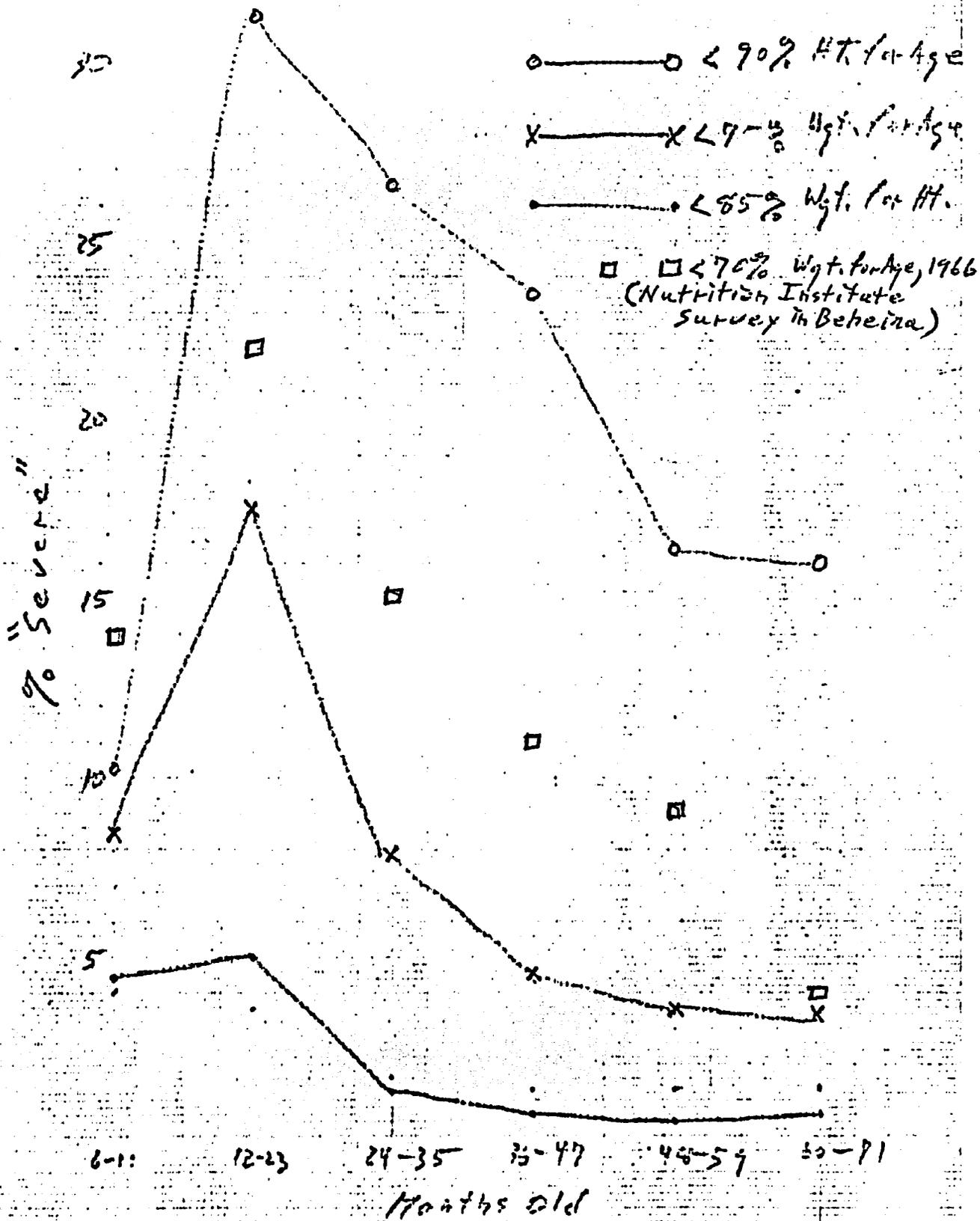


FIGURE II

INTENDED  
CONCENTRATION

HOME PREPARATION OF  
ORALYTE WITH WATER GLASS  
AND TEA SPOON — SHANAWAN

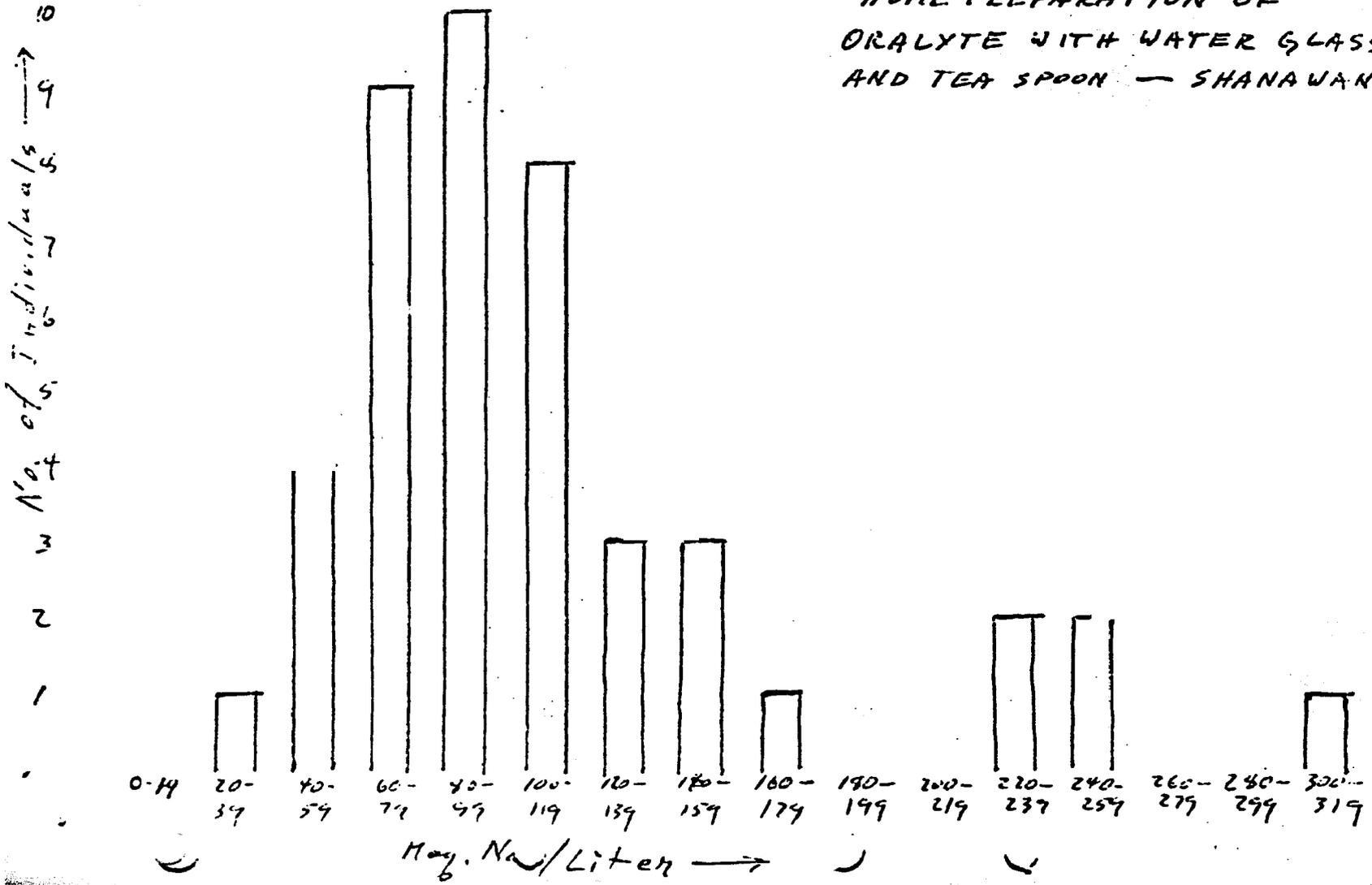


FIGURE III

Distribution of 8016 children  
6 mo. to 6 years old  
EGYPT, 1978

